AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double brackets indicating deletions.

Listing of the Claims

1. (PREVIOUSLY PRESENTED) A DNA chip, comprising:

a flat carrier; and

an array of spots containing catcher molecules, each spot being assigned a microelectrode arrangement for detecting binding events between the catcher molecules and target molecules applied via an analyte solution, the electrode arrangement being at least partially embedded in a hydrophilic reaction layer which is permeable to target molecules and in which immobilized catcher molecules are distributed three-dimensionally,

the hydrophilic reaction layer having a thickness approximately in the range of $1L$ to $5L$, L being the sum of electrode width and electrode spacing,

the electrode width and the electrode spacing being approximately 1μm,

the hydrophilic reaction layer having a thickness between 2μm and 10μm, and

the hydrophilic reaction layer being a hydrogel internally cross-linked by a cross-linking agent.

2.-4. (CANCELLED)

5. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the microelectrode arrangement is a two-pole system, and wherein the reaction layer has a thickness of approximately 3 μm.

6. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the microelectrode arrangement is a four-pole system, and wherein the reaction layer has a thickness of approximately 7 μm.

7. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the reaction layer is thermally stable up to approximately 95°C.

8. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the reaction layer contains coupling groups for the covalent binding of catcher molecules.

9. (CANCELLED)

10. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 6, wherein the hydrophilic reaction layer is an acrylamide-based radical-crosslinkable hydrogel including at least one of maleic anhydride and glycidyl (meth)acrylate as coupling groups.

11. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the electrode arrangement is an interdigital electrode arrangement.

12. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 11, wherein the interdigital electrode arrangement is a two-pole microelectrode system.

13. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 11, wherein the interdigital electrode arrangement is a four-pole microelectrode system.

14. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the flat carrier includes a semiconductor layer and an insulating layer connected thereto, the insulating layer carrying the electrode arrangement and the reaction layer on its side remote from the semiconductor layer.

15. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 14, wherein the semiconductor layer is a silicon layer.

16.-20. (CANCELLED)

21. (NEW) The DNA chip as claimed in claim 1, wherein the cross-linking agent is methylene bisacrylamide.

22. (NEW) The DNA chip as claimed in claim 1, wherein the cross-linking agent is a dimethylacrylate.

23. (NEW) The DNA chip as claimed in claim 22, wherein the dimethylacrylate is tetraethylene glycol dimethylacrylate.

24. (NEW) The DNA chip as claimed in claim 1, wherein the hydrophilic reaction layer is thermally cross-linked by the cross-linking agent.

25. (NEW) The DNA chip as claimed in claim 1, wherein the hydrophilic reaction layer is photo-cross-linked by the cross-linking agent.

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END OF CLAIM LISTING